



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
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④

D350-748-243TRN
Job Sheet 195162



Part No: D350-748-243TRN

Job Qty: 1 pcs

Part Name: Crosstube Installation, High Aft



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 5/15/19

Job Tracking No:

Due Date: 5/29/19

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG REV A IPP Rev:A New Issue LL 12.05.08

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		DAS	Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time		
100	Mori Selki TL-40 - 1	1 pcs	5/29/19	5/29/19	2.01	3.57	Mori Selki TL-40 - 1		66	2019-06-12
110	QC 2	1 pcs	5/29/19	5/29/19	0.00	0.00	QC 2 - 1		9-89	
							QC 2 - 12			
							QC 2 - 14			
							QC 2 - 17			
							QC 2 - 19			
							QC 2 - 2			
							QC 2 - 20			
							QC 2 - 22			
							QC 2 - 23			
							QC 2 - 25			
							QC 2 - 32			
							QC 2 - 33			
							QC 2 - 35			
							QC 2 - 39			
							QC 2 - 4			
							QC 2 - 40			
							QC 2 - 44			
							QC 2 - 45			
							QC 2 - 48			
							QC 2 - 49			
							QC 2 - 50			
							QC 2 - 51			
							QC 2 - 52			
							QC 2 - 57			
							QC 2 - 62			
							QC 2 - 63			
							QC 2 - 8		DAS	
							QC 2 - 66		66	2019-06-12
							QC 2 - 64		9-89	
							QC 2 - 65			

5/15/2019

[Dart Hawkesbury] Job Sheet - Lajeunesse, Marie

					QC 2 - 5	
					QC 2 - 71	DAS
120	Mori Seiki TL-40 - 1 - B4B	1 pcs	5/29/19	0.00 3.57	Mori Seiki TL-40 - 1 - B4B	66 2019-06-18
130	QC 2	1 pcs	5/29/19	0.00 0.00	QC 2 - 1	9-89
					QC 2 - 12	
					QC 2 - 14	
					QC 2 - 17	
					QC 2 - 19	
					QC 2 - 2	
					QC 2 - 20	
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					QC 2 - 39	
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					QC 2 - 40	
					QC 2 - 44	
					QC 2 - 45	
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					QC 2 - 52	
					QC 2 - 57	
					QC 2 - 62	
					QC 2 - 63	
					QC 2 - 8	DAS
					QC 2 - 66	66 2019-06-18
					QC 2 - 64	9-89
					QC 2 - 65	
					QC 2 - 5	
					QC 2 - 71	
140	QC 8	1 pcs	5/29/19	0.00 0.00	QC 8 - 12	
					QC 8 - 14	
					QC 8 - 17	
					QC 8 - 20	
					QC 8 - 25	
					QC 8 - 3	
					QC 8 - 32	
					QC 8 - 33	
					QC 8 - 35	
					QC 8 - 39	
					QC 8 - 4	
					QC 8 - 44	
					QC 8 - 45	
					QC 8 - 49	
					QC 8 - 58	
					QC 8 - 8	
					QC 8 - 9	
					QC 8 - 68	
					QC 8 - 67	GP 19-06-21
					QC 8 - 1 (A)	
					QC 8 - 47	
					QC 8 - 40	
					QC 8 - 52	
					QC 8 - 23	

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5/15/2019

[Dart Hawkesbury] Job Sheet - Lajeunesse, Marie

150 Crosstubes - 2 - B4B	1 pcs	5/29/19	0.00 0.81	Crosstubes - 1 - B4B	JW
				Crosstubes - 2 - B4B	
				Crosstubes - 3 - B4B	
				Crosstubes - 4 - B4B	
190 Packaging 3-1 - Stock - B4B	1 pcs	5/29/19	0.00 0.00	Packaging 3 - 1 - B4B	JW
				Packaging 3 - 2 - B4B	
				Packaging 3 - 3 - B4B	
				Packaging 3 - 4 - B4B	
				Packaging 3 - 5 - B4B	
				Packaging 3 - 6 - B4B	
				Packaging 3 - 7 - B4B	
				Packaging 3 - 8 - B4B	
				Packaging 3 - 9 - B4B	
				Packaging 3 - 10 - B4B	
				Packaging 3 - 11 - B4B	
				Packaging 3 - 12 - B4B	
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				Packaging 3 - 33 - B4B	
				Packaging 3 - 34 - B4B	
				Packaging 3 - 35 - B4B	
				Packaging 3 - 36 - B4B	
200 QC 21 - SA	1 pcs	5/29/19	0.00 0.00	QC 21 - SA - 21	DAS 21 0-39 SEP 30 2019
				QC 21 - SA - 70	
				QC 21 - SA - 53	

Part Op 100 - TL-40 (Mori Seiki CNC Lathe Large) 1-Cut tube on chop saw, leave extra mat'l for facing and install plugs 350-241
 Descriptions: on both ends. 2-Face both sides of tube. 3- Turn program 02000 section on both side as per folio FB468. 4- Turn program 03000 section on both side as per folio FB468. 5- Blend transition lines only with belt sander 60 grit. Folio rev: A Dwg rev: A
 110 - (QC2- Inspect parts off machine FAI/FAIB)
 120 - TL-40 (Mori Seiki CNC Lathe Large) 1- Turn program 04000 section on both side as per folio FB468. 2- Turn program 05000 section on both side as per folio FB468. 3- Blend transition lines only with belt sander 60 grit. 4-Scribe part # as per Dwg D350-748-243. Folio rev: A Dwg rev: A
 130 - (QC2- Inspect parts off machine FAI/FAIB) PERFORME ULTRASONIC MEASUREMENT
 140 - (QC8- Inspect parts - second check)
 150 - Crosstubes-2 (Crosstubes) 1-Grind machining marks
 190 - Identify and stock in kanban rack
 200 - (QC21- Final Inspection - Work Order Release)

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6021-125	Crosstube Material - 17-4Ph SS	1 pcs (1 ea)	100-Mori Seiki TL-40 - 1	F151691

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5/15/2019

[Dart Hawkesbury] Job Sheet - Lajeunesse, Marie

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
100-Mori Selki TL-40 - 1	D6021-125	1	39	0
Part Specifications				
Specifications could not be found.				



Container No: S189707



Part: D350-748-243TRN

Job No: 195162

Serial No/Batch: S189707

Revision: A

Inspector:

Exp Date:

Instructions:

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 813 632-8200
Email: sales@dartaero.com
www.dartaerospace.com

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Date: 06/12/19

Item	Qty	Part Number	Description
	-243		
1	X	D350-748-243	CROSSTUBE ASSEMBLY (AS 350355 HI AFT)
2	1	D6021-125	CROSSTUBE
3	2	D3502-1	SUPPORT
4	2	D6123-7	CLAMP CUSHION
5	1	AETC-1032	INSERT
6	2	MS21920-20	CLAMP
7	1	OR MS21920-21-22	(PER PART SPEC. M-MS21920-20-21-22)
8	1	NAS1149C0363R	WASHER (OR AN660C10)
9	1	NAS1635-3-8	SCREW (OR MS51958-63)
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6021-125
FINISHED LENGTH AFTER TURNING = 124.70±0.08 (AFTER BENDING/TRIMMING = 122.70 REF)
- 2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCE: PER DART QSI 018 UNLESS OTHERWISE NOTED.
WALL THICKNESS ECCENTRICITY PER DART QSI 038 7.2
MIN. ALLOWABLE WALL IS -0.020 FROM NOMINAL
UNITS: INCHES UNLESS OTHERWISE NOTED.
- 4) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 5) IDENTIFICATION: PART PART NUMBER "D350-748-243" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 6) WEIGHT: 28.85 lbs
- 7) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.290 HOLE.
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLEND OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 9) TURNING
10) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES PER SIDE. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. ON TOP HALF OF BEND, AND 8% ON BOTTOM HALF OF BEND.
- 11) MAX AMPLITUDE OF RIPPING ALONG BENT PORTION OF THE TUBE IS 0.030 (ZN A1-3)
- 12) MAX TWIST: WITH TUBE LAYED FLAT ON SURFACE. THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.38 (ZN C1-3).
- ASSEMBLY
14) TO INSTALL D3502-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.02" TO 0.03" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
15) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TIGHTENING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

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UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 195762 MUS
19-05-11

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2015 MAR 18 07

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2015 MAR 18 07
REV 15/04/19 07/14/05

UNDER REVIEW

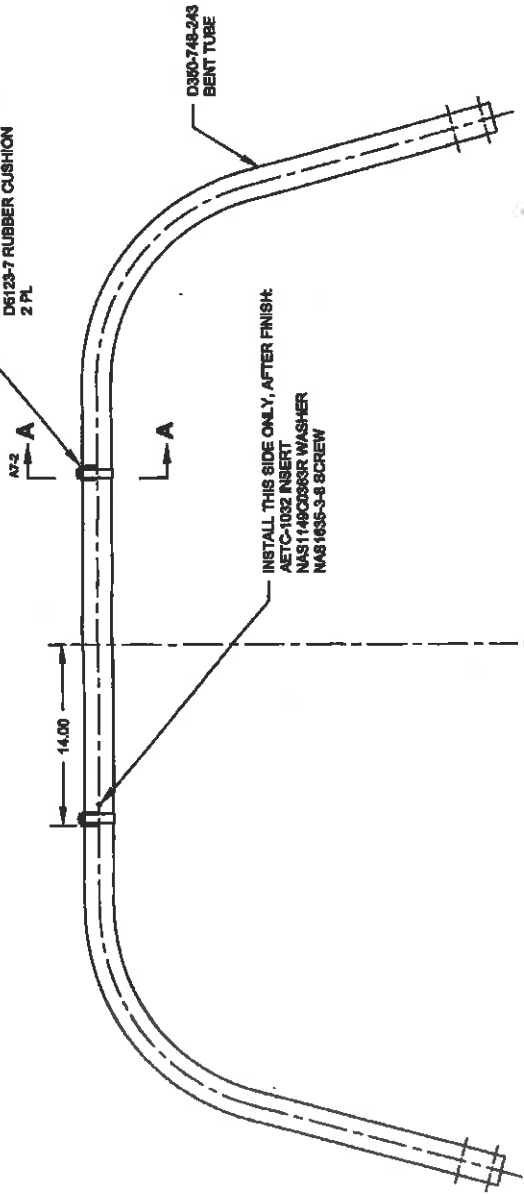
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A	NEW ISSUE	DESCRIPTION	CP	BY	DATE
DESIGN					
DRAWN					
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MFG. APPR.					
APPROVED					
DATE	15.01.21				

DART AEROSPACE LTD HARRISBURG, ONTARIO, CANADA	
DRAWING NO.	D350-748-243
REV. A	SHEET 1 OF 4
TITLE	CROSSTUBE (AS 350355 HI AFT)
SCALE	NTS
COPYRIGHT © 2015 BY DART AEROSPACE LTD THIS DRAWING IS A PROPERTY OF DART AEROSPACE LTD IT IS TO BE USED ONLY FOR THE PROJECT AND NOT BE REPRODUCED OR COPIED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD	

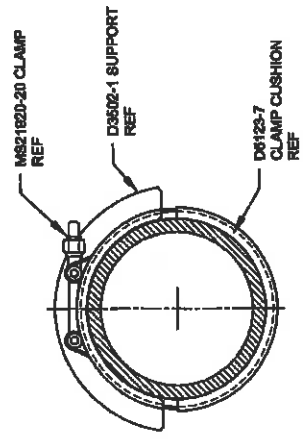
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14 15
D3502-1 SUPPORT
MS21820-20 CLAMP (OR -21-22)
D6123-7 RUBBER CUSHION
2 PL



D350-748-243
BENT TUBE

**D350-748-243
ASSEMBLY DETAIL**

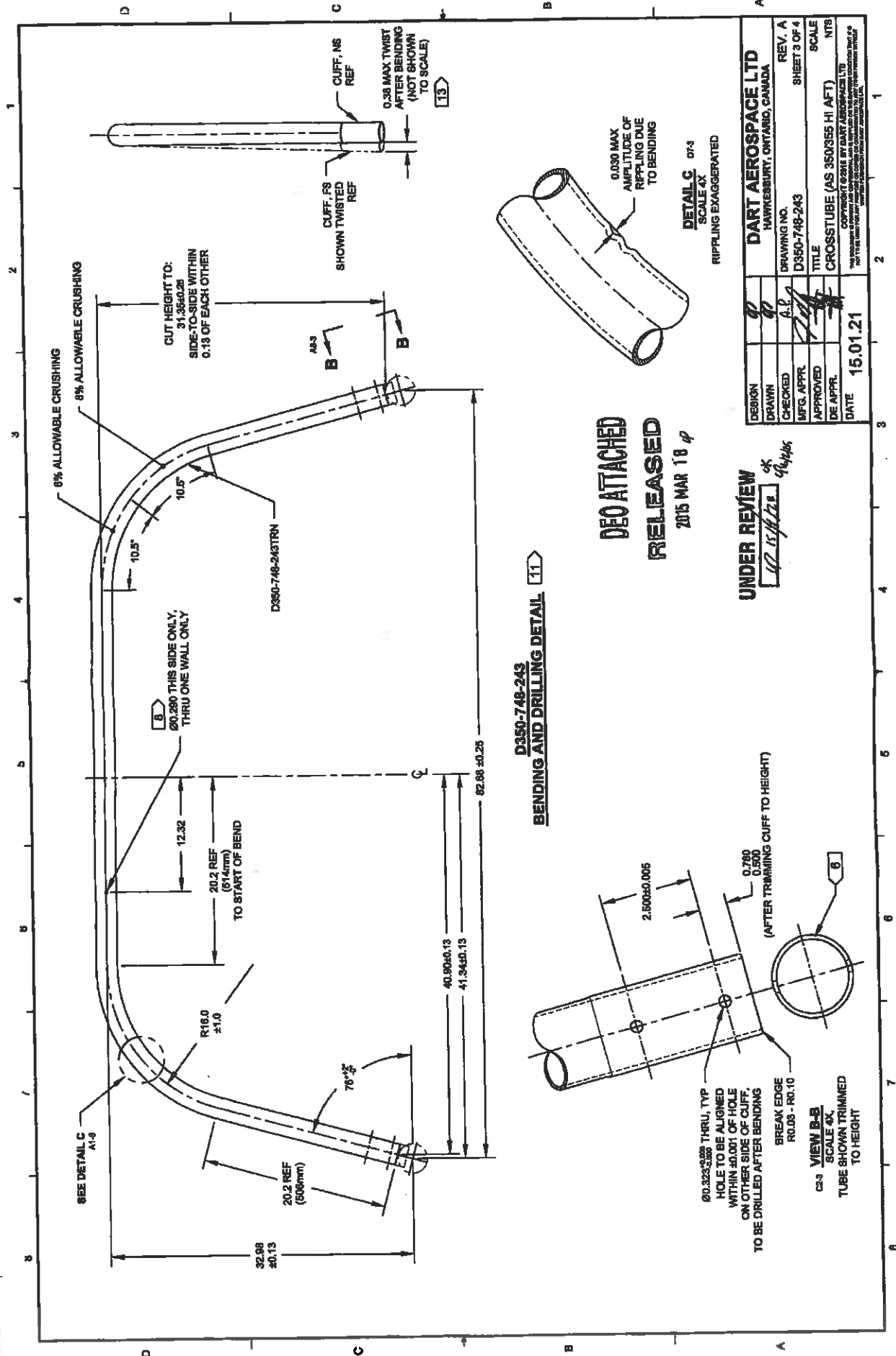


SECTION A-A D4-2
SCALE 6X

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DESIGN	00	DART AEROSPACE LTD HAMMERSLEY, ONTARIO, CANADA
DRAWN	00	
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MFG. APPR.	<i>[Signature]</i>	REV. A SHEET 2 OF 4
APPROVED	<i>[Signature]</i>	TITLE CROSSTUBE (AS 350/365 HI AFT)
DE APPR.	<i>[Signature]</i>	SCALE NTS
DATE	15.01.21	COMPONENT © 2016 BY DART AEROSPACE LTD ALL RIGHTS RESERVED. NO PART OF THIS DOCUMENT MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM DART AEROSPACE LTD.

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D350-748-243
BENDING AND DRILLING DETAIL 11

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DRAWING NO. D350-748-243	TITLE CROSSTUBE	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D350-748-243-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN 90	CHECKED A.S.		MFG. APPR. <i>[Signature]</i>	APPROVED <i>[Signature]</i>		DE APPR. <i>[Signature]</i>	
DATE 15.11.18	DATE 15.11.18		DATE 15.02.19	DATE FEB 19 2016		DATE 2016.02.19	

AMEND NOTE 2 (SHEET 1) AS FOLLOWS:

- 2) FINISH: PREPARE SURFACE PER DART QSI 005 4.1.4
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2
 OR
 POWDER COAT WHITE (4.3.5.2) PER DART QSI 005 4.3

RELEASED
 2016-02-26
 ELN 16-534

④

DART AEROSPACE LTD	Work Order: 195162
Description: Crosstube Assembly (AS350/355 High Alt SS)	Part Number: D350-748-243
Inspection Dwg: D350-748-243 Rev: A	Page 1 of 2

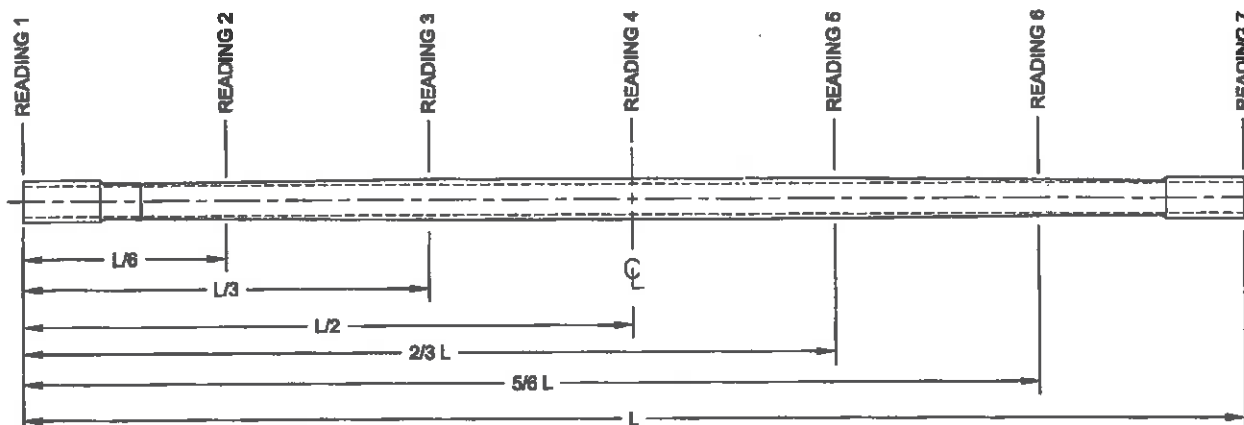
FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+/-0.005	2.244	✓		
	2.180	+0.005/-0.000	2.185	✓		
	2.180	+0.005/-0.000	2.185	✓		
	2.208	+0.005/-0.000	2.213	✓		
	2.234	+0.005/-0.000	2.239	✓		
	2.253	+0.005/-0.000	2.258	✓		
	2.272	+0.005/-0.000	2.277	✓		
	2.299	+0.005/-0.000	2.304	✓		
	0.063	+/-0.010	.063	✓		
	5.25	+/-0.060	5.253	✓		
	R0.063	+/-0.010	.063	✓		
	R0.50	+/-0.030	.500	✓		
SIDE B	2.240	+/-0.005	2.245	✓		
	2.180	+0.005/-0.000	2.185	✓		
	2.180	+0.005/-0.000	2.185	✓		
	2.208	+0.005/-0.000	2.213	✓		
	2.234	+0.005/-0.000	2.239	✓		
	2.253	+0.005/-0.000	2.258	✓		
	2.272	+0.005/-0.000	2.277	✓		
	2.299	+0.005/-0.000	2.304	✓		
	0.063	+/-0.010	.063	✓		
	5.25	+/-0.060	5.252	✓		
	R0.063	+/-0.010	.063	✓		
	R0.50	+/-0.030	.500	✓		
	124.70	+/-0.060	124.72	✓		

④

DART AEROSPACE LTD	Work Order:	195762
Description: Crosstube Assembly (AS350/355 High Alt SS)	Part Number:	D350-748-243
Inspection Dwg: D350-748-243 Rev: A		Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.146	.136	.136	.140	.010	0.030"
READING 2 L= 20.78	.129	.131	.129	.128	.003	
READING 3 L= 41.57	.165	.175	.178	.169	.013	
READING 4 L= 62.35	.167	.173	.176	.172	.009	
READING 5 L= 83.13	.180	.167	.163	.176	.017	
READING 6 L= 103.92	.124	.133	.135	.125	.011	
READING 7 L= 124.70	.141	.135	.137	.142	.007	

Calibration Result

Actual Block Thickness: 100-200

Sitescan 250 Measured Thickness: 100-200

Measured by: DAS 66 9-89		Audited by: GP		Preliminary Approval:	
Date: 2019-06-18		Date: 19-06-21		Date:	
Rev	Date	Change	Revised by		Approved
A	15.09.09	New Issue (P/O D350-748-203)	KJ		

Entered: _____ Date: _____

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐



Job: _____		DISPOSITION		DEPARTMENT/PROCESS	
Part No. _____		Rework ☐	Skid-tube ☐	Cross tube ☐	Eng. (Non-AW) ☐
		Scrap ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐
		Use-as-is ☐	Large Fab ☐	Finishing ☐	Rec/Store/Packaging ☐
Date: _____	Sequence #: _____	QTY Affected: _____		MRB (QS1042) ☐	
Description Work Order Deviation		Disposition			
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY			
		Pressure/Forced ☐	Contamination ☐	Power Loss/Surge ☐	Positioned Wrong ☐
		Bending ☐	Misaligned/off center ☐	Folio/Program ☐	Outside Tolerance ☐
		Crushing ☐	BOM/Route ☐	Grain Direction ☐	Drawing ☐
Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Finish ☐		
Crimp/Kink/Ripple/Wave/Twist ☐	Incomplete/Unclear Instructions ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐		
Marks/Chatter ☐	Drill Holes ☐	Out of Sequence ☐	Misread ☐		
Mislabeled ☐	Fit/Function ☐	Off-set/Set-up ☐			
Other/Details: _____					
		Completed By _____			
		Lead hand / Supervisor _____			
		QC / QA Coordinator _____			